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Gonzalo Lucioni

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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
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EXAMINER

PULLIAS, JESSE SCOTT

ART UNIT

PAPER NUMBER

2626

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,840	Applicant(s) LUCIONI, GONZALO	
	Examiner JESSE S. PULLIAS	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15, 17-30 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15, 17-30, and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/05/2009 has been entered.

2. This office action is in response to correspondence filed 01/05/2009 regarding application 10/560,840, in which claims 15, 17-22, and 27 were amended, and claims 16 and 31 were cancelled. Claims 15, 17-30 and 32 are pending in the application and have been considered.

Response to Arguments

3. Applicant's arguments on page 8 of the Remarks with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claim 27 is objected to because of the following informalities: In lines 1-2, the examiner assumes "a audio sequence" should be "an audio sequence". In line 11, the examiner assumes "includes" should be "including". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Vogten et al. (5,479,564).

Consider claim 27, Vogten discloses a method for the temporal compression or expansion of an audio sequence of samples (**Col 13 lines 9-11, 40-42**, increasing or decreasing the duration of digital samples of signals) comprising:

controlling the temporal compression or expansion based on a conversion factor specifying a number of samples to delay by (**Col 13 lines 23-24**, D is the factor by which the duration is changed, **Col 12 lines 50-51, Col 13 lines 42-43**, $T_i * 10000$ samples),

specifying a working cycle that contains a predetermined number of working steps (**Col 13 lines 10-14**, first output is kept constant once every so many cycles, or increased by two every so many cycles, which can fairly be considered a working cycle);

specifying a sub-sequence of the sequence of samples for a working cycle (**Col 10 lines 65-66**, the segments)

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generating during the working cycle a time-staggered sub-sequence that is time-staggered to the sub-sequence of samples (**Col 12 lines 48-52**, $x(t)$ and $x(t-T_1)$, first two segment signals);

merging during the working cycle the sub-sequence with the time-staggered sub-sequence (**Fig 6**, summing unit 64, **Col 12 lines 48-55**), wherein

prior to merging, one of the sub-sequence and the time-staggered subsequence is filtered, the filter includes a first coefficient function (**Fig 7**, element 71a, multiplying the audio samples by the window coefficients) and a second coefficient function (**Fig 7**, element 71b multiplying the audio samples by the window coefficients) which each vary as functions of time in accordance with a sigmoid function (**Col 7 lines 1-5**, **Fig 3a**),

generating an additional time-staggered sub-sequence (**Col 12 lines 48-52**, $x(t-T_2)$, the third segment)

providing a third coefficient function changing over time in accordance with a sigmoid function (**Col 11 lines 58-6**, **lines 65-67**, succeeding segments are additionally delayed in the storage unit and window functions multiply them, so the third window may be fairly considered an third coefficient function)

wherein merging during the working cycle the sub-sequence with the time-staggered sub-sequence includes merging the additional time-staggered sub-sequence (**Col 12 lines 40-50**, the three segments are merged)

wherein the method is associated with a voice output unit (**Col 14 lines 5-10**) to adjust audio playback speed of a sequence of audio samples without affecting tonal pitch of the sequence (**Col 13 lines 60-65**).

Consider claim 28, Vogten discloses that prior to merging the sub-sequence and the time-staggered subsequence the sub-sequence is filtered (**Fig 7**, element 71a, multiplying the audio samples by the window coefficients) and/or the time-staggered sub-sequence is filtered (**Fig 7**, element 71b multiplying the audio samples by the window coefficients).

Consider claim 29, Vogten discloses the filter includes a first coefficient function (**Fig 7**, element 71a) and a second coefficient function (**Fig 7**, element 71b), the coefficient functions changing over time in accordance with a linear function or a sigmoid function (**Col 7 lines 1-5, Fig 3a**).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15, 17, 20-24, 26, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogten et al. (5,479,564) in view of Degen et al. (5,386,493).

Consider claim 15, Vogten discloses a device for the temporal expansion or compression of a time period for duration of a sequence of audio samples (**Col 13 lines**

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9-11, 40-42, increasing or decreasing the duration of digital samples of signals) to adjust audio playback speed without affecting tonal pitch of the sequence (**Col 13 lines 15-18**, changing the duration of a signal independent of pitch), comprising:

an input for receiving a first sequence of audio signal samples (**Col 10 lines 54-55, Col 13 lines 40-41**);

a memory unit (**Fig 6**, storage unit 62) that cyclically controls the temporal expansion or compression of the first sequence (**Col 13 lines 10-12**, output is kept constant once every so many cycles) based on a conversion factor (**Col 13 lines 23-24**, D is the factor by which the duration is changed) specifying a number of samples to delay (**Col 12 lines 50-51, Col 13 lines 42-43**, $T_i * 10000$ samples), with a working cycle having a predetermined number of working steps for processing a sub-sequence of the sequence of samples (**Col 13 lines 10-14**, first output is kept constant once every so many cycles, or increased by two every so many cycles, which can fairly be considered a working cycle);

a delay unit operatively connected to the input memory, wherein the delay unit references the sample to be processed in one of the number of working steps, and determines a delayed sample from the memory unit that has been delayed by the number of samples to delay in comparison to the sample to be processed (**Col 12 lines 48-52**, $x(t)$ and $x(t-T_1)$);

a filter unit, comprising:

a first multiplication unit (**Fig 7, 72a**) operatively connected to an output of the memory unit and to a first coefficient unit providing a first coefficient in accordance

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to a first coefficient function (**Fig 7**, element 71a. In order to multiply the audio sample by the window coefficient, it has to be referenced from a buffer at the correct time location, which may be considered an output of the memory unit), the first multiplication unit providing an output of the product of the output of the memory unit and the first coefficient (**Fig 6**, signal is multiplied by coefficient at 61 stored in storage unit 62, then output to summing unit 63), and

a second multiplication unit (**Fig 7**, 72b) operatively connected to an output of a delay unit and to a second coefficient unit providing a second coefficient in accordance with a second coefficient function (**Fig 7**, element 71b. In order to multiply the audio sample by the window coefficient, it has to be referenced from a buffer at the correct delayed time location, which may be considered an output of the delay unit), the second multiplication unit providing an output of the product of the output of the delay unit and the second coefficient (**Fig 6**, signal is multiplied by coefficient at 61 and delayed in storage unit 62, then output to summing unit 63); and

a merge unit (**Fig 6**, summing unit 64) configured to generate a modified version of the first sequence of audio signal samples, characterized by a playback speed different than that of the first sequence without imparting a change in tonal pitch to the modified version relative to the first sequence (**Col 13 lines 15-18**, changing the duration of a signal independent of pitch), by:

merging a filtered second sequence, derived from the first sequence (**Col 12 lines 48-52**, $x(t-T_1)$), processed through the filter unit and output by the first multiplication unit, with a time-staggered and filtered third sequence derived from the

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first sequence (**Col 12 lines 48-52**, $x(t-T_2)$, the third segment), processed through the filter unit and outputs by the second multiplication units, wherein the first and second coefficients each have a value which changes as a function of time between zero and one (**Col 7 lines 1-5, Fig 7**) and, throughout the working cycle, the first coefficient plus the second coefficient equals one (**Fig 1, Col 6 lines 1-5**).

Vogten further implies, or at least suggests temporal compression or expansion in a data transmission network (**Col 13 lines 53-54**, a computer implies a network connection).

Vogten does not specifically mention the square of the first coefficient plus the square of the second coefficient equals one.

Degen discloses the square of a first coefficient plus the square of a second coefficient equals one (**Fig 7a, Col 16 lines 55-60**, in order for the power of functions 221 and 222 to be equal, the sum of their squares inherently has to be 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Vogten such that the square of a first coefficient plus the square of a second coefficient equals one, in order to avoid the roll associated with regular parabolic functions, as suggested by Degen (**Col 16 lines 36-39**).

Consider claim 22, Vogten discloses a device for the temporal expansion or compression of a time period for duration of a sequence of audio samples to adjust audio playback speed without affecting tonal pitch of the sequence (**Col 13 lines 15-18**, changing the duration of a signal independent of pitch), comprising:

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an input for receiving a first sequence of audio signal samples (**Col 10 lines 54-55, Col 13 lines 40-41**);

a memory unit operatively connected to the input to store the samples (**Fig 6, storage unit 62**);

a control unit that cyclically controls temporal expansion or compression of the first sequence (**Col 13 lines 10-12, output is kept constant once every so many cycles**) based on a conversion factor (**Col 13 lines 23-24, D is the factor by which the duration is changed**) specifying a number of samples to delay (**Col 12 lines 50-51, Col 13 lines 42-43, $T_i * 10000$ samples**), with a working cycle having a predetermined number of working steps for processing a sub-sequence of the sequence of samples (**Col 13 lines 10-14, first output is kept constant once every so many cycles, or increased by two every so many cycles, which can fairly be considered a working cycle**);

a delay unit operatively connected to the input memory, wherein the delay unit references the sample to be processed in one of the number of working steps and determines a delayed sample from the memory unit that has been delayed by the number of samples to delay in comparison to the sample to be processed (**Col 12 lines 48-52, $x(t)$ and $x(t-T_1)$**);;

a filter unit, comprising:

a first multiplication unit (**Fig 7, 72a**) operatively connected to an output of the memory unit and to a first coefficient unit providing a first coefficient in accordance to a first coefficient function (**Fig 7, element 71a**. In order to multiply the audio sample by the window coefficient, it has to be referenced from a buffer at the correct time location,

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which may be considered an output of the memory unit), the first multiplication unit providing an output of the product of the output of the memory unit and the first coefficient (**Fig 6**, signal is multiplied by coefficient at 61 stored in storage unit 62, then output to summing unit 63), and

a second multiplication unit (**Fig 7**, 72b) operatively connected to an output of a delay unit and to a second coefficient unit providing a second coefficient in accordance with a second coefficient function (**Fig 7**, element 71b. In order to multiply the audio sample by the window coefficient, it has to be referenced from a buffer at the correct delayed time location, which may be considered an output of the delay unit), the second multiplication unit providing an output of the product of the output of the delay unit and the second coefficient (**Fig 6**, signal is multiplied by coefficient at 61 and delayed in storage unit 62, then output to summing unit 63); and

a merge unit (**Fig 6**, summing unit 64) configured to generate a modified version of the first sequence of audio signal samples, characterized by a playback speed different than that of the first sequence without imparting a change in tonal pitch to the modified version relative to the first sequence (**Col 13 lines 15-18**, changing the duration of a signal independent of pitch), by:

merging a filtered second sequence, derived from the first sequence (**Col 12 lines 48-52**, $x(t-T_1)$), processed through the filter unit and output by the first multiplication unit, with a time-staggered and filtered third sequence derived from the first sequence (**Col 12 lines 48-52**, $x(t-T_2)$, the third segment), processed through the filter unit and outputs by the second multiplication units,

an additional delay unit operatively connected to the input memory, the additional delay unit determining a delayed sample twice that of the first delay unit (**Col 12 lines 48-52**, $x(t-T_2)$ is delayed twice $x(t-T_1)$); and

an additional multiplication unit operatively connected to an output of the additional delay unit and to an additional coefficient unit providing an additional coefficient in accordance with to an additional coefficient function (**Col 11 lines 58-6, lines 65-67**, succeeding segments are additionally delayed in the storage unit and window functions multiply them, so the third window may be fairly considered an additional coefficient function), the additional multiplication unit providing an output of the product of the output of the additional delay unit and the additional coefficient, wherein the merge unit merges the outputs of the first, second, and additional multiplication units (**Col 12 lines 40-45, lines 65-67**, the samples from the three segments which have each been multiplied by a window coefficient are summed).

Vogten further implies, or at least suggests temporal compression or expansion in a data transmission network (**Col 13 lines 53-54**, a computer implies a network connection).

Vogten does not specifically mention the square of the first coefficient plus the square of the second coefficient equals one.

Degen discloses the square of a first coefficient plus the square of a second coefficient equals one (**Fig 7a, Col 16 lines 55-60**, in order for the power of functions 221 and 222 to be equal, the sum of their squares inherently has to be 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Vogten such that the square of a first coefficient plus the square of a second coefficient equals one, in order to avoid the roll associated with regular parabolic functions, as suggested by Degen (**Col 16 lines 36-39**).

Consider claim 17, Vogten discloses the first coefficient starts with 1 at the beginning of the working cycle and changes in accordance with the first coefficient function wherein the first coefficient changes linearly or in accordance with a sigmoid function (**Fig 3a**).

Consider claim 20, Vogten discloses the sub-sequences include at least fifty eight percent of all the samples of a sequence (**Col 12 lines 52-58**, the three sub-sequences include 100% of the samples of the sequence they define).

Consider claim 21, Vogten discloses the processed sub-sequences include less than half of all the samples of a sequence (**Col 12 lines 52-58**, the three subsequences include 10% of “a sequence” 10 times their length).

Consider claim 23 Vogten discloses the second coefficient function equals a second auxiliary function minus the product of a third auxiliary function and the first coefficient function, and wherein the additional coefficient function equals the product of the negative of the second auxiliary function and the third auxiliary function (**Fig 1**, let

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the second auxiliary function be $2A(t)$ and the third auxiliary function be $3A(t)$. Let the first, second, and third coefficient functions, 13a, 13b, and 13c in the figure, be $1C(t)$, $2C(t)$, and $3C(t)$. Defining $2A(t) = 0$ for $0 < t < 2L$ and $3C(t)$ for $2L < t < 3L$ and letting $3A(t) = 0$ for $0 < t < 2L$ and -1 for $2L < t < 3L$. Then it follows that $3C(t) = -2A(t) * 3A(t)$ and $2C(t) = 2A(t+L) - 3A(t-L) * 1C(t)$.

Consider claim 24, Vogten discloses the sum of the first, second and additional coefficient functions is equal to one (**Fig 1, Col 6 lines 1-5**).

Consider claim 26, Vogten discloses wherein the expansion or the compression is less than 20 percent (**Col 13 lines 1-3, pitch can be controlling without changing duration**).

With respect to claim 30, Vogten does not specifically mention discloses the square of a first coefficient plus the square of a second coefficient equals one.

Degen discloses the square of a first coefficient plus the square of a second coefficient equals one (**Fig 7a, Col 16 lines 55-60, in order for the power of functions 221 and 222 to be equal, the sum of their squares inherently has to be 1**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Vogten such that the square of a first coefficient plus the square of a second coefficient equals one, in order to avoid the roll associated with regular parabolic functions, as suggested by Degen (**Col 16 lines 36-39**).

Consider claim 32, Vogten suggests a subsection includes less than one third of the working steps of a working cycle (**Col 12, lines 45-47**, extension to more than 3 segments).

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogten et al. (5,479,564) in view of Degen et al. (5,386,493), in further view of Yoshida et al. (5,687,240).

With respect to claim 18, Vogten and Degen do not specifically mention a time-variant attenuator filter connected down stream from the merge unit.

Yoshida discloses a time-variant attenuator filter connected down stream from the merge unit (**Fig 6, S15 and S16**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Vogten and Degen to include a time-variant attenuator filter connected down stream from the merge unit, in order to provide smoother and higher quality sound signals, as suggested by Yoshida (**Col 10 lines 50-54**).

Consider claim 19, Vogten implies, or at least suggests at least six audio sequences, each of approximately 30 ms are processed in a working cycle (**Col 13 lines 43-35, lines 20-25**, 10000Hz sampling rate would suggest processing

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“approximately” 6 sequences of 30 ms in a working cycle).

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vogten et al. (5,479,564) in view of Degen et al. (5,386,493), in further view of Takeuchi et al (5,432,296).

With respect to claim 25, Vogten and Degen do not specifically mention an all-pass with the following transmission function $H(z) = (z^{-N} + \gamma) / (1 + \gamma * z^{-N})$ where H is the transmission function and γ determining a delay and γ has the value 0.5 or a value greater than 0.5.

Takeuchi et al. discloses an all-pass with the following transmission function $H(z) = (z^{-1} + a) / (1 + a * z^{-1})$, (**Col 2 eq. 1**, with $N=1$ and $a=\gamma$ is the same as the claimed transfer function). Takeuchi further teaches the coefficient “a” can be changed to change the delay, implying that a can be 0.5 or greater (**Col 4 lines 23-26**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Vogten and Degen by using an all-pass with the transmission function disclosed by Takeuchi, in order to control the delay of the signal, as suggested by Takeuchi (**Col 4 lines 23-26**).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse Pullias whose telephone number is 571/270-5135. The examiner can normally be reached on M-F 9:00 AM - 4:30 PM.

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12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571/272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571/270-6135.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jesse S. Pullias/
Examiner, Art Unit 2626

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626